

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Alles 22S-232**

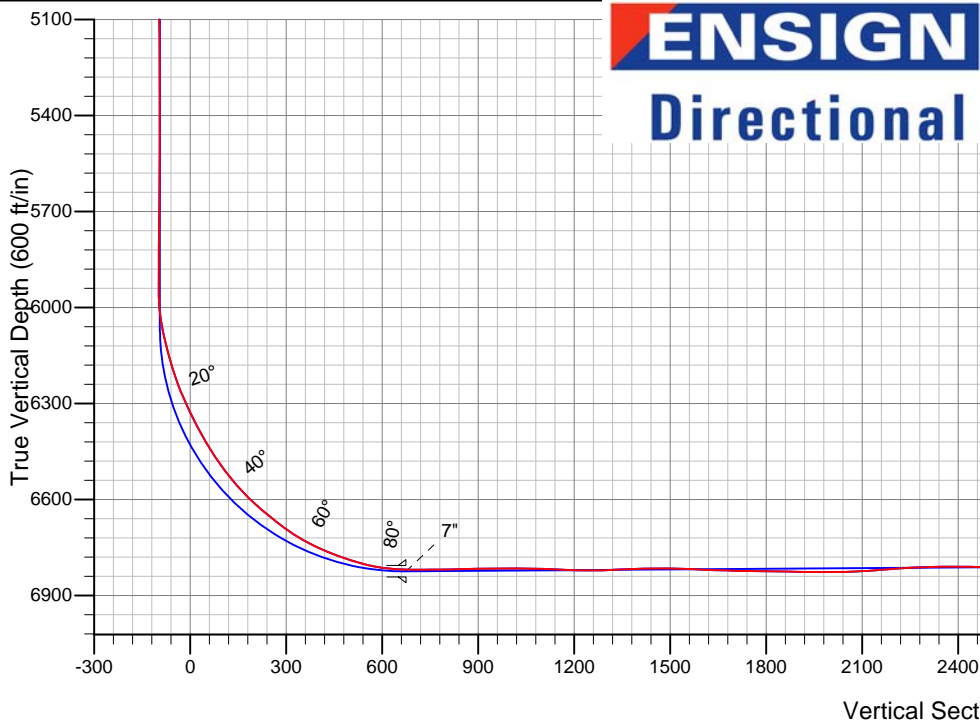
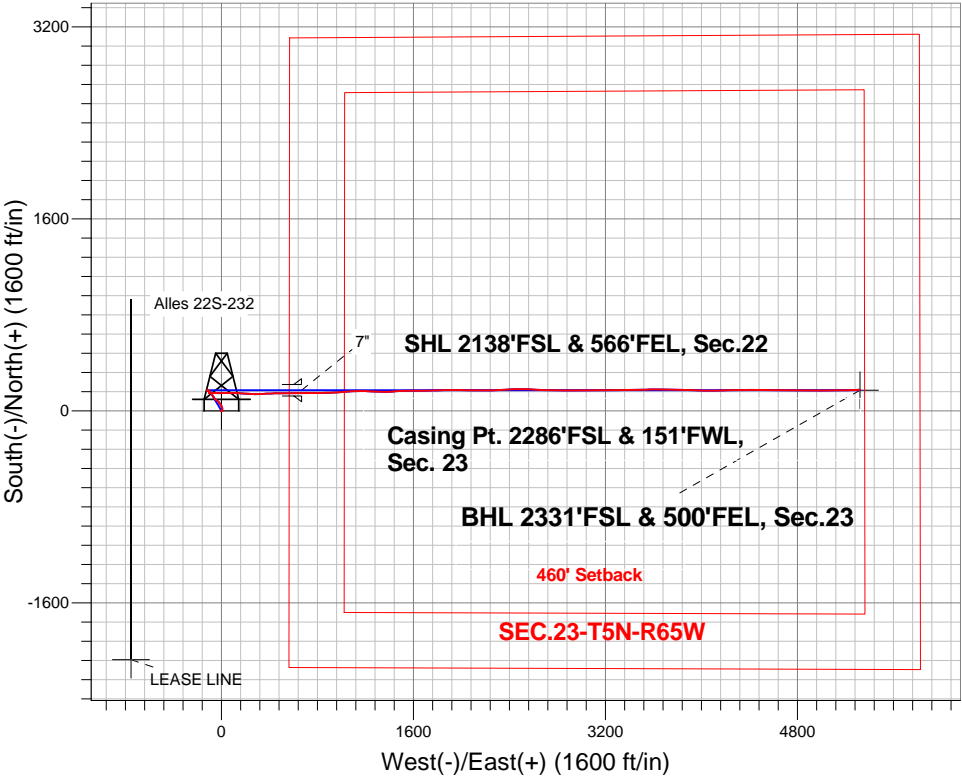
Surface Location: Alles 22S-HZ Pad Sec.22-T5N-R65W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4645.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1383658.67	3239036.27	40.383370	-104.641930	
Enisgn 14 RKB - 15' WELL @ 4660.0ft (Enisgn 14 RKB - 15')						

FINAL SURVEY

Projected Bottom Hole Location
11888'MD 6790'TVD 176'N & 5321'E of SHL
89.6 degree Incl @ 87.2 degree AZM



Alles 22S-HZ Pad Sec.22-T5N-R65W
Alles 22S-232
Wellbore #1
9:47, April 08 2014

ANNOTATIONS

No annotation data is available.

LEGEND

- Alles 22S-232, Wellbore #1, Plan #1 (3-28-14) V0
- Wellbore #1
- Survey #1

BHL 2331'FSL & 500'FEL, Sec.23



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.22-T5N-R65W

Alles 22S-HZ Pad Sec.22-T5N-R65W

Alles 22S-232

Wellbore #1

Survey: Survey #1

Standard Survey Report

08 April, 2014

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-232
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (Enisgn 14 RKB - 15')
Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (Enisgn 14 RKB - 15')
Well:	Alles 22S-232	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.22-T5N-R65W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Alles 22S-HZ Pad Sec.22-T5N-R65W				
Site Position:		Northing:	1,383,618.80ft	Latitude:	40.383260
From:	Lat/Long	Easting:	3,239,056.16ft	Longitude:	-104.641860
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.55 °

Well	Alles 22S-232					
Well Position	+N-S	0.0 ft	Northing:	1,383,658.67 ft	Latitude:	40.383370
	+E-W	0.0 ft	Easting:	3,239,036.27 ft	Longitude:	-104.641930
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,645.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/28/2014	8.42	66.96	52,844

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	88.15	

Survey Program	Date	4/8/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
123.0	11,888.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.01	306.50	1.0	0.0	0.0	0.0	0.73	0.73	0.00
SHL 2138'FSL & 566'FEL, Sec.22 - LEASE LINE									
123.0	0.90	306.50	123.0	0.6	-0.8	-0.8	0.73	0.73	0.00
186.0	0.40	163.60	186.0	0.7	-1.1	-1.1	1.97	-0.79	-226.83
249.0	1.20	132.20	249.0	0.0	-0.6	-0.6	1.40	1.27	-49.84
313.0	0.70	150.30	313.0	-0.8	0.1	0.1	0.90	-0.78	28.28
376.0	0.40	79.30	376.0	-1.1	0.5	0.5	1.09	-0.48	-112.70
464.0	0.20	122.30	464.0	-1.1	1.0	0.9	0.33	-0.23	48.86
597.0	1.10	140.30	597.0	-2.2	2.0	1.9	0.69	0.68	13.53
721.0	1.70	82.40	720.9	-2.9	4.6	4.5	1.17	0.48	-46.69
786.0	1.50	50.80	785.9	-2.2	6.2	6.1	1.37	-0.31	-48.62

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Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (Enisgn 14 RKB - 15')
Well:	Alles 22S-232	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
850.0	2.10	2.10	849.9	-0.5	6.9	6.8	2.47	0.94	-76.09
886.0	2.70	356.50	885.8	1.0	6.8	6.9	1.79	1.67	-15.56
977.0	2.90	358.20	976.7	5.4	6.6	6.8	0.24	0.22	1.87
1,039.0	4.50	2.50	1,038.6	9.4	6.7	7.0	2.62	2.58	6.94
1,133.0	6.70	358.20	1,132.2	18.6	6.7	7.3	2.38	2.34	-4.57
1,261.0	6.30	341.20	1,259.3	32.7	4.2	5.2	1.53	-0.31	-13.28
1,413.0	7.30	328.20	1,410.3	48.8	-3.6	-2.0	1.20	0.66	-8.55
1,565.0	6.40	317.60	1,561.2	63.3	-14.4	-12.3	1.02	-0.59	-6.97
1,718.0	6.10	315.00	1,713.3	75.3	-25.9	-23.4	0.27	-0.20	-1.70
1,901.0	4.90	305.90	1,895.4	86.8	-39.1	-36.3	0.81	-0.66	-4.97
2,084.0	4.90	314.80	2,077.8	96.9	-51.0	-47.8	0.42	0.00	4.86
2,236.0	4.10	320.30	2,229.3	105.6	-59.1	-55.6	0.60	-0.53	3.62
2,388.0	4.60	321.50	2,380.9	114.6	-66.3	-62.6	0.33	0.33	0.79
2,544.0	4.50	329.80	2,536.4	124.8	-73.3	-69.2	0.43	-0.06	5.32
2,703.0	5.60	331.20	2,694.8	136.9	-80.2	-75.7	0.70	0.69	0.88
2,830.0	6.20	322.40	2,821.1	147.8	-87.3	-82.5	0.85	0.47	-6.93
2,956.0	5.90	318.30	2,946.4	158.0	-95.8	-90.6	0.42	-0.24	-3.25
3,050.0	4.60	312.90	3,040.0	164.2	-101.8	-96.4	1.48	-1.38	-5.74
3,144.0	4.10	308.70	3,133.7	168.9	-107.2	-101.6	0.63	-0.53	-4.47
3,239.0	3.20	309.60	3,228.5	172.7	-111.8	-106.2	0.95	-0.95	0.95
3,365.0	2.00	241.40	3,354.4	173.9	-116.5	-110.8	2.44	-0.95	-54.13
3,523.0	0.50	214.30	3,512.4	172.0	-119.3	-113.7	0.99	-0.95	-17.15
3,680.0	0.80	189.50	3,669.4	170.3	-119.9	-114.3	0.26	0.19	-15.80
3,839.0	0.30	66.10	3,828.4	169.4	-119.7	-114.1	0.63	-0.31	-77.61
3,998.0	0.40	102.80	3,987.4	169.5	-118.7	-113.2	0.15	0.06	23.08
4,220.0	1.10	114.40	4,209.3	168.4	-116.0	-110.6	0.32	0.32	5.23
4,410.0	1.10	94.70	4,399.3	167.5	-112.6	-107.1	0.20	0.00	-10.37
4,600.0	0.90	131.00	4,589.3	166.4	-109.6	-104.2	0.34	-0.11	19.11
4,790.0	1.80	142.60	4,779.2	163.0	-106.7	-101.4	0.49	0.47	6.11
4,980.0	1.90	140.60	4,969.1	158.2	-102.9	-97.7	0.06	0.05	-1.05
5,170.0	0.80	150.30	5,159.1	154.6	-100.2	-95.2	0.59	-0.58	5.11
5,359.0	0.80	174.60	5,348.1	152.2	-99.4	-94.5	0.18	0.00	12.86
5,517.0	0.70	181.90	5,506.0	150.1	-99.4	-94.5	0.09	-0.06	4.62
5,674.0	1.30	216.40	5,663.0	147.7	-100.5	-95.6	0.53	0.38	21.97
5,831.0	0.40	255.20	5,820.0	146.2	-102.0	-97.3	0.65	-0.57	24.71
5,926.0	0.50	218.10	5,915.0	145.7	-102.6	-97.9	0.32	0.11	-39.05
5,957.0	0.10	239.10	5,946.0	145.6	-102.7	-98.0	1.32	-1.29	67.74
5,989.0	2.50	58.20	5,978.0	146.0	-102.2	-97.4	8.12	7.50	559.69
6,020.0	6.20	62.60	6,008.9	147.1	-100.1	-95.3	11.98	11.94	14.19
6,052.0	9.60	74.50	6,040.6	148.6	-96.0	-91.1	11.74	10.63	37.19
6,083.0	11.80	83.30	6,071.1	149.7	-90.4	-85.5	8.82	7.10	28.39
6,115.0	13.00	90.70	6,102.3	150.0	-83.5	-78.6	6.22	3.75	23.13
6,146.0	14.60	93.50	6,132.4	149.7	-76.1	-71.2	5.59	5.16	9.03
6,178.0	16.30	93.90	6,163.3	149.2	-67.6	-62.8	5.32	5.31	1.25
6,210.0	17.30	94.70	6,193.9	148.5	-58.4	-53.6	3.21	3.13	2.50
6,242.0	19.40	93.90	6,224.3	147.7	-48.3	-43.5	6.61	6.56	-2.50
6,273.0	21.60	90.70	6,253.3	147.3	-37.5	-32.7	7.96	7.10	-10.32
6,304.0	23.60	88.40	6,281.9	147.4	-25.6	-20.8	7.05	6.45	-7.42
6,336.0	25.10	88.10	6,311.1	147.8	-12.4	-7.6	4.70	4.69	-0.94
6,368.0	26.80	87.70	6,339.8	148.3	1.6	6.4	5.34	5.31	-1.25
6,399.0	27.60	89.50	6,367.4	148.7	15.8	20.5	3.70	2.58	5.81
6,431.0	29.40	90.20	6,395.5	148.7	31.0	35.8	5.72	5.63	2.19
6,463.0	30.20	91.20	6,423.3	148.5	46.9	51.7	2.94	2.50	3.13
6,495.0	31.40	90.70	6,450.8	148.2	63.3	68.1	3.83	3.75	-1.56

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Design:	Wellbore #1	Database:	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,526.0	33.40	89.50	6,477.0	148.2	79.9	84.7	6.78	6.45	-3.87
6,557.0	36.30	88.90	6,502.4	148.5	97.6	102.4	9.42	9.35	-1.94
6,589.0	39.00	90.70	6,527.7	148.5	117.2	121.9	9.11	8.44	5.63
6,621.0	41.90	92.50	6,552.1	147.9	137.9	142.6	9.77	9.06	5.63
6,652.0	44.10	94.60	6,574.8	146.6	159.0	163.7	8.47	7.10	6.77
6,684.0	46.30	94.00	6,597.3	144.9	181.7	186.2	7.00	6.88	-1.88
6,716.0	48.10	94.20	6,619.0	143.2	205.1	209.6	5.64	5.63	0.63
6,747.0	49.60	95.20	6,639.4	141.3	228.3	232.8	5.41	4.84	3.23
6,779.0	51.30	94.20	6,659.8	139.3	252.9	257.3	5.83	5.31	-3.13
6,811.0	52.90	90.40	6,679.5	138.3	278.2	282.5	10.62	5.00	-11.88
6,843.0	54.90	87.00	6,698.3	138.9	304.0	308.3	10.62	6.25	-10.63
6,874.0	58.30	85.60	6,715.4	140.6	329.8	334.2	11.60	10.97	-4.52
6,906.0	61.60	86.30	6,731.4	142.5	357.4	361.9	10.48	10.31	2.19
6,938.0	64.40	87.90	6,745.9	144.0	385.9	390.4	9.82	8.75	5.00
6,970.0	66.70	88.60	6,759.2	144.9	415.0	419.5	7.46	7.19	2.19
7,001.0	69.00	89.30	6,770.9	145.4	443.7	448.2	7.71	7.42	2.26
7,033.0	70.70	89.70	6,781.9	145.6	473.8	478.2	5.44	5.31	1.25
7,065.0	72.60	89.50	6,792.0	145.9	504.1	508.6	5.97	5.94	-0.63
7,097.0	74.80	89.70	6,801.0	146.1	534.9	539.3	6.90	6.88	0.63
7,128.0	78.80	89.30	6,808.0	146.3	565.0	569.5	12.96	12.90	-1.29
7,160.0	81.90	89.50	6,813.4	146.7	596.6	601.0	9.71	9.69	0.63
7,192.0	85.00	89.50	6,817.0	146.9	628.4	632.8	9.69	9.69	0.00
7,224.0	88.10	89.70	6,819.0	147.2	660.3	664.7	9.71	9.69	0.63
7,236.0	89.00	89.50	6,819.3	147.3	672.3	676.7	7.68	7.50	-1.67
7,281.0	90.00	89.30	6,819.7	147.7	717.3	721.7	2.27	2.22	-0.44
7,311.0	90.40	89.10	6,819.6	148.1	747.3	751.7	1.49	1.33	-0.67
7,341.0	90.70	89.10	6,819.3	148.6	777.3	781.7	1.00	1.00	0.00
7,372.0	91.40	88.90	6,818.7	149.2	808.3	812.7	2.35	2.26	-0.65
7,402.0	91.80	88.90	6,817.9	149.7	838.2	842.6	1.33	1.33	0.00
7,433.0	91.90	88.40	6,816.9	150.5	869.2	873.6	1.64	0.32	-1.61
7,463.0	90.70	88.60	6,816.2	151.2	899.2	903.6	4.06	-4.00	0.67
7,493.0	89.50	87.90	6,816.1	152.2	929.2	933.6	4.63	-4.00	-2.33
7,523.0	89.70	86.30	6,816.3	153.7	959.1	963.6	5.37	0.67	-5.33
7,554.0	90.20	86.10	6,816.4	155.7	990.1	994.6	1.74	1.61	-0.65
7,584.0	90.60	85.80	6,816.2	157.9	1,020.0	1,024.6	1.67	1.33	-1.00
7,614.0	90.20	85.80	6,816.0	160.0	1,049.9	1,054.5	1.33	-1.33	0.00
7,644.0	88.80	87.00	6,816.2	161.9	1,079.9	1,084.5	6.15	-4.67	4.00
7,675.0	87.80	87.90	6,817.1	163.3	1,110.8	1,115.5	4.34	-3.23	2.90
7,705.0	87.20	88.80	6,818.4	164.2	1,140.8	1,145.5	3.60	-2.00	3.00
7,736.0	87.10	90.00	6,820.0	164.5	1,171.7	1,176.4	3.88	-0.32	3.87
7,766.0	88.40	91.20	6,821.2	164.2	1,201.7	1,206.4	5.90	4.33	4.00
7,796.0	89.30	92.80	6,821.8	163.1	1,231.7	1,236.3	6.12	3.00	5.33
7,828.0	90.40	93.30	6,821.8	161.4	1,263.6	1,268.2	3.78	3.44	1.56
7,859.0	91.80	92.10	6,821.3	160.0	1,294.6	1,299.1	5.95	4.52	-3.87
7,891.0	92.90	91.40	6,819.9	159.0	1,326.6	1,331.0	4.07	3.44	-2.19
7,923.0	93.00	89.50	6,818.3	158.7	1,358.5	1,362.9	5.94	0.31	-5.94
7,956.0	92.30	88.10	6,816.8	159.4	1,391.5	1,395.9	4.74	-2.12	-4.24
7,986.0	91.50	86.70	6,815.8	160.8	1,421.4	1,425.9	5.37	-2.67	-4.67
8,017.0	90.30	85.80	6,815.3	162.8	1,452.3	1,456.8	4.84	-3.87	-2.90
8,049.0	89.20	86.50	6,815.4	165.0	1,484.3	1,488.8	4.07	-3.44	2.19
8,080.0	88.10	88.10	6,816.2	166.4	1,515.2	1,519.8	6.26	-3.55	5.16
8,112.0	87.70	89.30	6,817.3	167.2	1,547.2	1,551.8	3.95	-1.25	3.75
8,143.0	87.70	89.70	6,818.6	167.4	1,578.2	1,582.8	1.29	0.00	1.29

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey									
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8,174.0	87.80	89.50	6,819.8	167.6	1,609.1	1,613.7	0.72	0.32	-0.65
8,206.0	88.10	89.70	6,820.9	167.9	1,641.1	1,645.7	1.13	0.94	0.63
8,237.0	88.50	89.80	6,821.9	168.0	1,672.1	1,676.7	1.33	1.29	0.32
8,269.0	88.50	89.10	6,822.7	168.3	1,704.1	1,708.6	2.19	0.00	-2.19
8,301.0	89.00	88.90	6,823.4	168.9	1,736.1	1,740.6	1.68	1.56	-0.63
8,333.0	89.30	88.90	6,823.9	169.5	1,768.1	1,772.6	0.94	0.94	0.00
8,364.0	89.20	88.60	6,824.3	170.2	1,799.1	1,803.6	1.02	-0.32	-0.97
8,395.0	89.10	88.20	6,824.7	171.0	1,830.0	1,834.6	1.33	-0.32	-1.29
8,427.0	89.00	87.70	6,825.3	172.2	1,862.0	1,866.6	1.59	-0.31	-1.56
8,459.0	89.20	88.60	6,825.8	173.2	1,894.0	1,898.6	2.88	0.63	2.81
8,490.0	89.00	89.50	6,826.3	173.7	1,925.0	1,929.6	2.97	-0.65	2.90
8,522.0	89.30	90.90	6,826.7	173.6	1,957.0	1,961.6	4.47	0.94	4.38
8,554.0	90.10	90.90	6,826.9	173.1	1,989.0	1,993.5	2.50	2.50	0.00
8,585.0	90.80	91.80	6,826.6	172.4	2,020.0	2,024.5	3.68	2.26	2.90
8,617.0	91.80	91.80	6,825.9	171.4	2,052.0	2,056.4	3.13	3.13	0.00
8,649.0	93.00	91.20	6,824.6	170.5	2,083.9	2,088.3	4.19	3.75	-1.88
8,680.0	94.00	90.90	6,822.7	170.0	2,114.8	2,119.2	3.37	3.23	-0.97
8,711.0	94.60	90.90	6,820.4	169.5	2,145.8	2,150.1	1.94	1.94	0.00
8,743.0	94.40	90.00	6,817.9	169.2	2,177.7	2,182.0	2.87	-0.63	-2.81
8,774.0	93.50	89.10	6,815.7	169.5	2,208.6	2,212.9	4.10	-2.90	-2.90
8,806.0	92.60	88.40	6,814.0	170.2	2,240.5	2,244.9	3.56	-2.81	-2.19
8,837.0	91.80	87.70	6,812.8	171.2	2,271.5	2,275.8	3.43	-2.58	-2.26
8,869.0	92.40	87.70	6,811.7	172.5	2,303.4	2,307.8	1.88	1.88	0.00
8,900.0	91.90	87.40	6,810.5	173.8	2,334.4	2,338.8	1.88	-1.61	-0.97
8,932.0	90.70	86.70	6,809.8	175.5	2,366.3	2,370.8	4.34	-3.75	-2.19
8,964.0	89.60	87.40	6,809.7	177.1	2,398.3	2,402.8	4.07	-3.44	2.19
8,996.0	88.50	87.20	6,810.2	178.6	2,430.3	2,434.8	3.49	-3.44	-0.63
9,027.0	87.70	88.20	6,811.2	179.9	2,461.2	2,465.7	4.13	-2.58	3.23
9,059.0	86.80	89.80	6,812.8	180.4	2,493.2	2,497.7	5.73	-2.81	5.00
9,090.0	86.60	90.90	6,814.6	180.2	2,524.1	2,528.6	3.60	-0.65	3.55
9,122.0	87.50	92.30	6,816.2	179.3	2,556.1	2,560.5	5.20	2.81	4.38
9,154.0	88.50	93.20	6,817.3	177.8	2,588.0	2,592.4	4.20	3.13	2.81
9,186.0	89.00	93.30	6,818.0	176.0	2,619.9	2,624.3	1.59	1.56	0.31
9,217.0	90.00	92.60	6,818.3	174.4	2,650.9	2,655.1	3.94	3.23	-2.26
9,249.0	91.50	91.60	6,817.9	173.2	2,682.9	2,687.1	5.63	4.69	-3.13
9,280.0	91.90	91.80	6,817.0	172.3	2,713.8	2,718.0	1.44	1.29	0.65
9,312.0	91.40	91.20	6,816.0	171.5	2,745.8	2,749.9	2.44	-1.56	-1.88
9,343.0	91.20	90.90	6,815.3	170.9	2,776.8	2,780.9	1.16	-0.65	-0.97
9,375.0	91.40	90.90	6,814.6	170.4	2,808.8	2,812.8	0.63	0.63	0.00
9,407.0	92.00	90.90	6,813.7	169.9	2,840.8	2,844.8	1.88	1.88	0.00
9,438.0	92.00	90.50	6,812.6	169.5	2,871.8	2,875.7	1.29	0.00	-1.29
9,470.0	91.40	90.00	6,811.6	169.4	2,903.7	2,907.7	2.44	-1.88	-1.56
9,502.0	91.50	89.80	6,810.8	169.4	2,935.7	2,939.7	0.70	0.31	-0.63
9,533.0	91.80	89.80	6,809.9	169.5	2,966.7	2,970.6	0.97	0.97	0.00
9,564.0	91.50	89.70	6,809.0	169.7	2,997.7	3,001.6	1.02	-0.97	-0.32
9,596.0	90.20	89.70	6,808.6	169.9	3,029.7	3,033.6	4.06	-4.06	0.00
9,628.0	90.10	89.50	6,808.5	170.1	3,061.7	3,065.6	0.70	-0.31	-0.63
9,660.0	90.40	89.30	6,808.3	170.4	3,093.7	3,097.6	1.13	0.94	-0.63
9,691.0	90.60	89.30	6,808.1	170.8	3,124.7	3,128.6	0.65	0.65	0.00
9,723.0	90.30	89.50	6,807.8	171.1	3,156.7	3,160.6	1.13	-0.94	0.63
9,754.0	90.10	89.10	6,807.7	171.5	3,187.7	3,191.6	1.44	-0.65	-1.29
9,786.0	90.70	89.10	6,807.5	172.0	3,219.7	3,223.6	1.88	1.88	0.00
9,818.0	91.20	89.30	6,806.9	172.5	3,251.7	3,255.5	1.68	1.56	0.63

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-232
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (Enisgn 14 RKB - 15')
Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (Enisgn 14 RKB - 15')
Well:	Alles 22S-232	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,849.0	91.00	89.70	6,806.4	172.7	3,282.7	3,286.5	1.44	-0.65	1.29
9,881.0	89.90	89.70	6,806.1	172.9	3,314.7	3,318.5	3.44	-3.44	0.00
9,913.0	89.90	89.50	6,806.2	173.1	3,346.7	3,350.5	0.63	0.00	-0.63
9,944.0	90.20	89.80	6,806.1	173.3	3,377.7	3,381.5	1.37	0.97	0.97
9,976.0	90.60	89.70	6,805.9	173.4	3,409.7	3,413.5	1.29	1.25	-0.31
10,007.0	91.40	88.90	6,805.4	173.8	3,440.7	3,444.5	3.65	2.58	-2.58
10,039.0	90.90	88.40	6,804.7	174.6	3,472.6	3,476.5	2.21	-1.56	-1.56
10,071.0	89.90	87.70	6,804.5	175.7	3,504.6	3,508.5	3.81	-3.13	-2.19
10,102.0	89.20	88.40	6,804.7	176.7	3,535.6	3,539.5	3.19	-2.26	2.26
10,134.0	88.60	89.10	6,805.4	177.4	3,567.6	3,571.5	2.88	-1.88	2.19
10,166.0	88.50	89.50	6,806.2	177.8	3,599.6	3,603.4	1.29	-0.31	1.25
10,198.0	88.40	89.80	6,807.0	178.0	3,631.6	3,635.4	0.99	-0.31	0.94
10,229.0	87.60	90.90	6,808.1	177.8	3,662.5	3,666.4	4.39	-2.58	3.55
10,261.0	87.60	91.10	6,809.5	177.3	3,694.5	3,698.3	0.62	0.00	0.63
10,293.0	88.40	91.20	6,810.6	176.6	3,726.5	3,730.2	2.52	2.50	0.31
10,325.0	88.50	91.10	6,811.4	176.0	3,758.5	3,762.2	0.44	0.31	-0.31
10,356.0	88.40	90.50	6,812.3	175.5	3,789.5	3,793.1	1.96	-0.32	-1.94
10,388.0	89.00	90.50	6,813.0	175.3	3,821.4	3,825.1	1.88	1.88	0.00
10,420.0	89.70	91.10	6,813.4	174.8	3,853.4	3,857.1	2.88	2.19	1.88
10,451.0	91.00	92.30	6,813.2	173.9	3,884.4	3,888.0	5.71	4.19	3.87
10,483.0	91.80	93.20	6,812.4	172.4	3,916.4	3,919.9	3.76	2.50	2.81
10,515.0	92.60	92.60	6,811.2	170.7	3,948.3	3,951.8	3.12	2.50	-1.88
10,547.0	93.10	91.20	6,809.6	169.7	3,980.3	3,983.7	4.64	1.56	-4.38
10,579.0	92.50	90.90	6,808.0	169.1	4,012.2	4,015.6	2.10	-1.88	-0.94
10,610.0	91.50	90.40	6,806.9	168.7	4,043.2	4,046.5	3.61	-3.23	-1.61
10,642.0	89.60	89.80	6,806.6	168.7	4,075.2	4,078.5	6.23	-5.94	-1.88
10,674.0	89.50	89.50	6,806.9	168.9	4,107.2	4,110.5	0.99	-0.31	-0.94
10,706.0	90.20	89.50	6,807.0	169.2	4,139.2	4,142.5	2.19	2.19	0.00
10,737.0	90.30	88.80	6,806.8	169.6	4,170.2	4,173.5	2.28	0.32	-2.26
10,769.0	90.00	88.10	6,806.7	170.5	4,202.2	4,205.5	2.38	-0.94	-2.19
10,801.0	89.30	88.40	6,806.9	171.5	4,234.1	4,237.5	2.38	-2.19	0.94
10,832.0	89.50	88.90	6,807.3	172.2	4,265.1	4,268.5	1.74	0.65	1.61
10,864.0	89.80	89.10	6,807.5	172.8	4,297.1	4,300.5	1.13	0.94	0.63
10,896.0	90.20	89.10	6,807.5	173.3	4,329.1	4,332.5	1.25	1.25	0.00
10,926.0	90.50	89.70	6,807.3	173.6	4,359.1	4,362.5	2.24	1.00	2.00
10,959.0	90.70	89.70	6,806.9	173.7	4,392.1	4,395.4	0.61	0.61	0.00
10,991.0	90.70	89.70	6,806.5	173.9	4,424.1	4,427.4	0.00	0.00	0.00
11,022.0	90.10	88.80	6,806.3	174.3	4,455.1	4,458.4	3.49	-1.94	-2.90
11,054.0	90.00	89.30	6,806.3	174.8	4,487.1	4,490.4	1.59	-0.31	1.56
11,086.0	90.40	90.20	6,806.2	175.0	4,519.1	4,522.4	3.08	1.25	2.81
11,118.0	90.40	91.90	6,806.0	174.4	4,551.1	4,554.4	5.31	0.00	5.31
11,149.0	90.70	92.30	6,805.7	173.3	4,582.1	4,585.3	1.61	0.97	1.29
11,181.0	91.30	91.20	6,805.1	172.3	4,614.1	4,617.2	3.92	1.88	-3.44
11,213.0	92.00	91.40	6,804.2	171.6	4,646.0	4,649.2	2.27	2.19	0.63
11,244.0	92.00	91.20	6,803.1	170.9	4,677.0	4,680.1	0.64	0.00	-0.65
11,276.0	91.50	90.90	6,802.1	170.3	4,709.0	4,712.0	1.82	-1.56	-0.94
11,308.0	90.90	90.90	6,801.4	169.8	4,741.0	4,744.0	1.88	-1.88	0.00
11,339.0	91.30	90.40	6,800.9	169.4	4,772.0	4,775.0	2.07	1.29	-1.61
11,371.0	91.50	90.40	6,800.1	169.2	4,804.0	4,806.9	0.63	0.63	0.00
11,403.0	92.00	90.50	6,799.1	168.9	4,835.9	4,838.9	1.59	1.56	0.31
11,434.0	91.70	90.00	6,798.1	168.8	4,866.9	4,869.8	1.88	-0.97	-1.61
11,466.0	92.20	89.70	6,797.0	168.9	4,898.9	4,901.8	1.82	1.56	-0.94
11,498.0	92.40	89.70	6,795.7	169.1	4,930.9	4,933.8	0.63	0.63	0.00
11,530.0	91.60	89.10	6,794.6	169.4	4,962.9	4,965.7	3.12	-2.50	-1.88

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-232
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (Enisgn 14 RKB - 15')
Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (Enisgn 14 RKB - 15')
Well:	Alles 22S-232	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,561.0	91.20	89.10	6,793.8	169.9	4,993.9	4,996.7	1.29	-1.29	0.00
11,593.0	91.50	89.10	6,793.1	170.4	5,025.8	5,028.7	0.94	0.94	0.00
11,625.0	90.90	89.30	6,792.4	170.8	5,057.8	5,060.7	1.98	-1.88	0.63
11,656.0	91.10	89.50	6,791.9	171.2	5,088.8	5,091.7	0.91	0.65	0.65
11,688.0	91.00	90.00	6,791.3	171.3	5,120.8	5,123.7	1.59	-0.31	1.56
11,720.0	90.70	90.00	6,790.8	171.3	5,152.8	5,155.7	0.94	-0.94	0.00
11,751.0	90.60	89.30	6,790.5	171.5	5,183.8	5,186.6	2.28	-0.32	-2.26
11,785.0	90.60	88.60	6,790.1	172.1	5,217.8	5,220.6	2.06	0.00	-2.06
11,815.0	90.10	88.10	6,789.9	173.0	5,247.8	5,250.6	2.36	-1.67	-1.67
11,832.0	89.60	87.20	6,790.0	173.7	5,264.8	5,267.6	6.06	-2.94	-5.29
11,888.0	89.60	87.20	6,790.4	176.4	5,320.7	5,323.6	0.00	0.00	0.00
BHL 2326'FSL & 500'FEL, Sec.23									

Checked By: _____	Approved By: _____	Date: _____
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